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## TECHNICAL REPORT

ONRL-55-67

MARINE SCIENCES IN TURKEY

By JOHN D. COSTLOW, Jr.

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## MARINE SCIENCES IN TURKEY

The two laboratories which represent the major Turkish effort in the marine sciences are the Hydrobiological Research Institute, associated with the University of Istanbul, and the Department of Navigation and Hydrography of the Turkish Navy. As both have been visited previously by ONRL personnel, the present report will give only that background information which is necessary for orientation, concentrating on the changes which have occurred since the last visit in 1963 (ONRL-35-63: Haderlie and Richards) and on plans for the future.

### Hydrobiological Research Institute, University of Istanbul

Located on the Bosphorus at Emirgan, Istanbul, the Institute represents an interesting combination of the old and the new in Turkey. The original building is a converted mansion, dating from a period when the harem was still part of the national scene, and the grounds are surrounded by a wall at least 14 ft high. Largely because of recent construction this building, which for some time served as the main laboratory and housed the extensive library, will be renovated in the future to provide research space for visiting scientists and offices for the administrative staff. The renovations include plans to provide living accommodations for visiting scientists. One two-story building has recently been completed and will be devoted largely to portions of the program dealing with systematics. The ground floor contains several small offices, a photographic dark room, and a number of storage closets. The second floor, designed as one large room, will be used to house the library and reference collections of fauna of Turkish waters. The room will hold approximately 70 people and will be used for conferences, classes, and scientific meetings. The new building is quite modern in design and is well planned; the large mosaic on the outside east wall should certainly stimulate discussion of evolution, of animals as well as of art. A second new building was under construction and hope was expressed that it would be completed by late summer of 1967. The ground floor contains two large laboratories plus one "wet room" which was designed for physiological studies. Six to seven smaller laboratory rooms are located on the second floor, and each is designed largely for individual use, to be provided eventually with running sea-water, gas, and compressed air.

The Institute continues to maintain a large well-equipped machine shop, largely for the construction of general laboratory equipment, and bottom grabs, small Nansen bottles, etc.

On the Island of Imbros, southwest of the Sea of Marmara, another field-laboratory associated with the Institute is being completed, but I did not have an opportunity to visit there. It will be devoted largely to studies on the sponge fishery of the area, but research space and accommodations for visiting scientists should be available. It will be

staffed by four biologists with approximately six technicians. For the present, one of the smaller existing vessels will be used for collecting and making local surveys associated with the sponge research program. Hope was expressed, however, that funds would be available next year to construct a new boat for the island laboratory.

The research vessel, ARAR, 31 m in length, was built in 1955 for the Laboratory for Research in Fishery Biology. When this facility was closed in 1960, inter-agency complications developed which prevented its transfer to the Institute and the vessel remained unused for several years. Although there was no definite reference to programs which had utilized the ARAR or to specific cruises in which she had participated, I was told that the vessel is now used by the Institute for the "longer cruises." Since the report of Haderlie and Richards (1963), there have been a number of changes in the scientific staff. The present staff devoted to studies in the marine environment are:

Prof. Dr. Muzaffer Demir, Director  
Ilham Artuz, Biologist  
Dr. Tekin Mengu, Biologist  
Enver Ören, Biologist  
Gazi Sun, Biologist  
Kazim Erkan, Biologist  
Mustafa Cakir, Biologist

In the section concerned with studies in freshwater, there appeared to be three staff members:

Dr. Fethi Aksiray, Biologist  
Ercan Sarihan, Biologist  
Yalcin, Sahin, Biologist

A number of the staff were absent from the Institute, some taking courses of study in other universities and others working with specialists at a variety of European laboratories. In addition to the staff, reference was made to eight full-time technicians. The language barrier made it virtually impossible to discuss research interests with the scientists individually, and thus it is necessary to present a general outline of the research program without indicating the individuals associated with particular aspects.

Although Demir is the Director of the Institute, it is apparent that Artuz is largely responsible for running the facilities, planning the new additions, and developing the research programs in the marine section. The impression was given that much of the research is applied, initiated and funded largely as a result of a specific interest expressed by agencies within the Turkish Government. In the past the research has been associated primarily with freshwater fisheries, but in more recent years there has

been an increased interest in marine programs. Artuz indicated six general programs which he expects will be continued during the next five years. They are:

- (1) Research on present levels of stocks of marine fish in Turkish waters of the Eastern Mediterranean with an interest in problems of overfishing in specific areas.
- (2) Studies to determine the levels at which exploitation of shrimp stocks in the Sea of Marmara can be maintained and the feasibility of using traps in the shrimp fishery. (Trawling is currently forbidden and the shrimp at depths of 80 - 100 m cannot be fished by other existing methods.)
- (3) Experiments to introduce "Japanese shrimp" into the Sea of Marmara for commercial exploitation.
- (4) A five-year study to determine the distribution and seasonal variations in populations of commercially important invertebrates over than sponges in Turkish waters.
- (5) Preparation of a catalogue of fishes of Turkish waters. Begun in 1966, this portion of the program will be continued and will include common and scientific names, notes on distribution and seasonal abundance, and a general description.
- (6) A biometric study of several species of commercially important fish, but primarily directed at the anchovy, to determine if the commercial catch is composed of several stocks or just one.

The general programs will include collections of hydrographic data from the areas under study.

Artuz expressed the view that the general attitude of the Turkish fishermen and Government toward science is gradually changing for the better. He cited as an example experiments in the early 1950's to introduce Austrian perch into Lake Begeshir. At that time it was the topic of considerable discussion and ridicule at all levels in Turkey. Now that the project has become a profitable industry there are new demands for similar studies and experiments in a number of areas of the country.

Although the younger members of the staff do not seem to have many opportunities to participate in European symposia and meetings, Artuz is involved in several groups and manages to keep well informed on current developments. He has been the Second Vice-President of the Economic and Statistics Committee of the General Fisheries Council for the Mediterranean (CFCM) of the FAO, and was one of the participants in the original Conference in Marine Biology which led to the establishment of the Mediterranean Association for Marine Biology and Oceanography (Cronin, ONRL-6-65; Costlow, ESN-21-6-67). Artuz has remained interested in

MAMBO and expressed hope that one of the courses which is tentatively scheduled for the summer of 1968 would be held in their new facilities in Istanbul.

Dr. Fethi, in charge of the limnological studies at the Institute, was away from the laboratory during my visit, and specific reference was not made to any of the programs involving freshwater.

Department of Navigation and Hydrography, Turkish Navy

The Turkish "Hydrographic Office" is also located on the Bosphorus, a few miles from the Hydrobiological Institute. The main building, which had just been completed at the time of the visit by Haderlie and Richards in 1963, now has the new wing which was planned at that time. An additional wing is currently being planned and funds were included for its construction in the 1967 appropriations. The new laboratory is spacious, well planned, and extremely well equipped. Much of the equipment has been acquired within the past few years, largely through US Navy funding for scientific supplies and equipment. The Department, which includes the Division of Oceanography and Geophysics, is directed by Capt. Nedret Berkay. The staff of the divisions are as follows:

Oceanography

- E. Ozturgut, TN, physical oceanography
- T. Akal, TN, military oceanography
- R. Cozkun, TN, geophysics, military oceanography
- I. Vural, (TN Reserves) chemist
- E. Akinci, geology
- F. Ozpolat, physical oceanography
- E. Pinar, Biologist
- T. Sahinci, chemist

Geophysics

- G. Nizel, TN
- K. Timar, TN
- O. Akyatan
- B. Tuzun

One of the staff members, E. Oren, is working for the PhD at the University of Istanbul. Working with Prof. Demir at the Hydrobiological Institute and supported by a grant from the Turkish National Research Council, Oren is interested in chaetognaths of the Aegean, Black Sea, Sea of Marmara, and the Eastern Mediterranean. Two other members of the staff are working with Prof. Remzi Geldiay at Ege University, Izmir, Turkey. E. Pinar is working on several aspects of fouling in the Bosphorus and has recently passed his "prelims." H. Uysal, formally a reserve officer

with the Hydro group, is completing a study of the ecology of mussels in Turkish waters. What positions will be available for these individuals when they have completed their degrees was not known.

It should be noted that three of the staff mentioned in the previous ONRL report are referred to as "lost" by their colleagues that remain. Miss R. Guner has gone on to the University of Washington, Miss A. Suyaran went to New York, and Mr. R. Piskin left for the University of Chicago.

In addition to the staff there are four laboratory technicians in the Hydro group.

The two hydrographic-oceanographic vessels, the TCG CARSAMBA and TCG CANDARLI, are 62 m in length and each can accommodate five scientists. Both vessels are equipped with UQN-1 echosounders with PDR and PGR recorders, a two-range Decca navigation system, Wheeler oceanographic winches, and the customary sampling equipment. In addition to monthly cruises in the Bosphorus and seasonal cruises in the Dardanelles, a number of other cruises have been made since 1963. In August 1964 one cruise was made in the Aegean followed by a second in November 1965. Two cruises were made in the Eastern Mediterranean during 1966, one in April and the second in August. In the Black Sea a total of eight cruises have been made, involving 372 stations, recording temperatures, salinity, oxygen,  $H_2S$ , plankton, and secchi disc readings. One of the Turkish vessels will participate in the Eastern Mediterranean six-nation cruise which is scheduled for late August and September 1967 (ESN-21-5, 1967).

As pointed out by Haderlie and Richards in 1963, there is little to show for this expenditure of time, effort, and money. The view was expressed, however, that some of the results of their effort would presently be available to the scientific community. In July 1967 the Bosphorus data was to have been declassified by the Turkish government and become generally available. The data pertaining to the Black Sea would become available to scientists in the US. The view was expressed that the existing data-exchange arrangement is largely a one-way street and works to the disadvantage of the Turkish participants. Data which they have collected and sent to Washington to be processed on a cooperative basis are, however, returned to them in the finished form for their analysis. The real complaint would seem to be that the means of extrapolating from these data to matters which might be militarily significant are classified and, thus, not available.

Many of the scientists in the Hydrographic Office have received an MS in universities in the United States. They give the impression of being capable and eager to develop additional programs which make use of these accumulated data.

### General Comments

The facilities which are available for marine studies in Turkey have undoubtedly improved considerably during the past four years. Insofar as the Hydrographic Office is concerned, adequate and modern equipment is available for oceanographic studies in the areas which are of interest to Turkey. One is impressed, however, by the lack of cooperation between the Hydrobiological Institute and the Hydrographic Office. One might expect that efforts would have been made to provide for the cooperative use of some of the equipment recently acquired by the Hydrographic Office. I was told that one of the three new salinometers at Hydro had been offered to the Hydrobiological Institute on the condition that samples collected by the Hydro staff would be analyzed and the results of all analyses would then be generally available to both groups. For reasons which were never explained to me the offer was rejected by the Hydrobiological group, and one of the members of their staff continues to occupy all of her time with titrations of sea-water samples. Several technicians associated with the Hydro office were previously employed by the Institute but made the change because of a significant increase in salary. In all of the new facilities of the Institute there was little sign of modern equipment, even that which might be considered the minimum requirements for studies in systematics and ecology. Younger staff members were extremely critical of the policy which has planned for the expansion of the laboratory facilities without some provision for new equipment and, perhaps more significantly from their point of view, without any sustained effort to increase salaries to a level which is equal to those provided for a comparable position at the Hydrographic Office.

Considerable concern was expressed over the difficulties in obtaining publications from other marine institutions. Beginning in 1953 the Hydrobiological Institute published Hidrobiologi, a journal which was used as an exchange for other publications. Since approximately 1962, however, Hidrobiologi has not been published because of insufficient funds. Thus, the research of the past five years, and probably for several years prior to 1962, remains unpublished with the exception of an occasional paper which has appeared in "foreign" journals. At least one member of the staff found it difficult to understand how it was possible to obtain relatively large sums of money for construction when it was not possible to find any support for the publication of the results of their research.

It seemed apparent to this author that Artuz has embarked on a long-term program of development for the laboratory, engaging in those research projects which are of direct interest to the Turkish Government, requesting support for additional facilities which can be shown to be necessary to carry out these programs, and generally developing "improved liaison" with appropriate governmental agencies in the hope of familiarizing them with the benefits which can be derived from research in the marine environment. It is to be hoped that as this plan progresses, perhaps coupled with



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the stimulation which results from foreign scientists using the new facilities, the problems of publication, salaries, and cooperative efforts with other Turkish agencies will be solved and lead to significant contributions to our knowledge of this little-known area of the Mediterranean.

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<p>The review considers the staff, general research programs, and research facilities in the two major Turkish institutions associated with the marine sciences, the Hydrobiological Research Institute and the Department of Navigation and Hydrography of the Navy, and the changes which have occurred since 1963.</p>			

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